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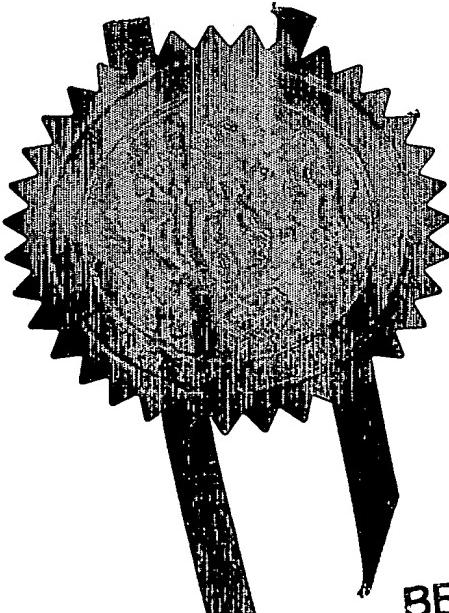
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(1)

DEMOUNTABLE FRAMING SYSTEM

- OUTLINE DESCRIPTION

This invention comprises a framing system for securely placing displayed material behind a (display) a generally rectangular screen and providing a means of hanging the ensemble on a wall or presenting on a horizontal surface. The system is fully "demountable".

- BACKGROUND

Most frames are made of flange elements assembled with fixings to enclose the screen and displayed material. Known "clip frames" replace the flanges with clips. A recent patent, US Patent No 6282828 makes the entire frame into a clip mechanism, mainly for table-top use. As with the two latter systems the proposed invention is intended to be inexpensive, being suitable for flat packing, self-assembly, and capable of being made from inexpensive materials. It can be used to display photos prints certificates etc, as well as mirrors, clocks or electronic displays. It is intended that the displayed material be smaller than the display screen leaving a transparent margin exposing the structural system, and so allowing flexibility of size.

Other features of the invention:

An optional incorporation of a backing sheet/panel, smaller than the display screen or capable of applying extra pressure (by flexing between its supports) onto the displayed material.

The displayed material can be easily exchanged.

The decorative appearance can also be based on a demountable decorative sheath.

The system can accommodate wall-hanging, (parallel to the wall), table top presentation, or multiples.

The entire ensemble can be dismantled and re-assembled without undoing tool aided fixings, or adhesives.

DESCRIPTION OF INVENTION

A demountable scaffold and framing structure capable of supporting the necessary functional elements to operate as a display frame:
the prime task is to support a generally rectangular planar element or "display screen", but the invention is a structural system with potentially wider applications.

As the minimum necessary functional elements were met by my earlier patent application which also featured a "hoop" (integral to the rear diagonal elements) attached to the corners of the display screen, and a means for securing it in that position, as a basis for a functional support structure, GB 0208488.7, of 12th April 2002, priority is claimed from that date.

Notional version. (Fig 1a,1b.)

A demountable scaffold structure such that one pair of parallel rods is held in place with another pair of rods at 90 degrees or 45 degrees to the first pair of rods by four rigid hoops whose internal diameter is gauged to accommodate two such rods or two such rods and intermediate planar element(s). The construction is stable except that the hoops can rotate to a position where they do not hold the elements.

NB Please note that vertical and horizontal as referring to rods in the description are generally interchangeable and the ensemble is also capable (with minor adjustments) of being rotated 90 degrees to the description.

Version 1 (Fig 2a, 2b, 2c, 2d, 2e.)

As the rods have been slid into position their extended ends can be used to securely sandwich a framing element located within the bearing area under the rod ends and dimensioned to fit the planar element and/or the limit defined by the hoops; the hoops are thus held in position by the framing element.

Furthermore, since the sliding action of the rods is easier in a direction at 90 degrees to the hoops as their effective aperture size is greater when not reduced by the thickness of the hoops impacting at 45 degrees; (optionally) flexing the rods into position thus results in a spring locking mechanism, so that orthogonal rods will not simply slide out and so reducing the necessary bearing.

Version 1c (Fig 2f) The version is adapted to use a flexible or elasticated linear element ; all versions are capable of being simply adapted to make corresponding (c) versions.

Version 2 (Fig 3a,3b, 3c, 3d.)

However , if one pair of rods is attached to the framing element, by sliding into holes in said framing element then the frame element can be curved away from the bearing points to make a free standing ,or decorative structure. Curving of the frame elements, partly caused by the angled penetration of the rods ,can be augmented by elasticated hoops located to span vertically between the extended ends of the diagonal rods on the rear.

It is important that the hoops are also supported on the front by rods locked into them, since they are only partially supported at the rear. The overall effect is thus concave.

Version 2b (Fig 3e,3f.)

Since the frame element is not sandwiched by the rod ends in this version, and is behind the display screen, the framing element need not have a "window" aperture and can provide rear support for the hoop elements by means of holes/slots (generally with a flat /straight side as its outside edge to support the hoop element, shown in Fig 3e,3f, as a semi-circle,) prepared in said framing element; indeed in this case the term "framing element" is less appropriate owing to the absence of a window. (Thus there is a corresponding version 3b but no corresponding version 4b as the display would be obscured ! There is also a corresponding version 5b.)

Version 3 (Fig 4a, 4b.)

As an alternative to the locking action of the front rods: a custom hoop can be designed in the form of a cone (with normal base and located as usual) so that resistance offered by the rear of the cone against the framing element will prevent it from becoming dysfunctional, (by rotating about its diameter.) It can also be customised to incorporate the rods located in it, if made of resilient plastic material. The form is otherwise similar to Version 2.

Version 4 (Fig 5a, 5b, 5c 5d.)

The role of the front rods can be taken by the framing element being in a forward position to support the critical side of the hoop, providing again that the rear rods are located in holes in the framing element (or otherwise affixed.) The overall effect is thus convex.

Version 5 (Fig 6.)

It is possible to dispense with both rods if the hoops are self-supporting by being dynamically loaded as holes in folded back flaps from a framing element of resilient material. These may be vulnerable and can be supported by other elements as before.

Version (Fig 7.)

However, if the hoops are not used both front and rear rods are sufficient to block forward and backward movement of the planar element, and still assuming a planar element of equal dimensions to the frame aperture, it cannot slide horizontally and vertically because these directions are

locked by the frame element as before. Even if the frame element is curved to become self-supporting (and the dimensional constraints being maintained in elevation) a minimal but effective bearing will be maintained in the corner. Thus it is only in the case where, only one set of rods is used, and the planar element must therefore be larger than the effective frame aperture so using the flanges of the frame element as restraining rods, that corresponds in an obvious way to the version described in US Patent No 6282828, claim 8, wherein the planar element is constrained by slots. The second pair of rods, in the present invention, ensures that curvature, or a stressed flat form, is maintained by the scaffold and not the planar element, interacting with the frame element.

In terms of the structures meeting the requirements of display frames:

- the planar element 2, should be generally rectangular and generally transparent to function as a display screen,
- a backing sheet 7, can be provided either the full size of the display screen, also held in the hoops or smaller, supported by rear rods, and if attached onto said rods by means of holes in the backing sheet then it can also apply dynamic pressure to the displayed material.
- a decorative sheath 11, can be placed on and folded around the frame element 1, such that its folds are held on by the scaffold rods 4,5.
- a hanging hole 10 can be provided in the upper flange and in Version 2 would be concealed within the naturally occurring gap behind the decorative sheath, and the same applies for a hole or tongue in the bottom flange to take one end of a tubular "L" shaped strut for table-top use. This strut can be a trimmed drinking straw, also adapted at the other end, to engage the cleft between the rear rods.

Extras:

- Being of light weight the invention is suited to adaption by means of suckers attached in holes or in the gap between frame and display screen, facing forwards or back, to mount on appropriate surfaces.
- The system can be extended to make multiples, vertically, horizontally, and in combination.

CONSTRUCTION

- Self-assembly (Version 2) can be as follows:

The rear diagonal rods 5, are inserted diagonally into the holes 15, in the

cking sheet 7, to form a unit.

The decorative sheath 11, and frame element 1, are placed together. The rod ends are then placed in the corresponding holes 15, in the decorative sheath 11, and frame element 1, with hoops 3, already attached to each one. The flaps 11a, 11b, of the decorative sheath are folded back into place, with the inner flap under the outer flap, and they are held in pace by being under the ends of the rear diagonal rods 5. This unit is secured by elasticated elements looped around the vertical pairs of rod ends 18.

The display screen 2, is placed in the frame aperture 16. The hoops 3, are placed on the corners of the display screen 2 where they are partially restrained by the frame element 1. The front rods 4 are located in one hoop by sliding directly towards the hoop and the flexed to meet the second hoop and carefully eased into the hoop in a straight form, in the orthogonal position, (vertically as a matter of preference.)

The displayed material 14, can be slid into place under the backing sheet 7, optionally leaving a transparent margin.

A rear support strut 9, can be attached for table top use, or suckers can be added if required.

Functional tollerance.

All versions can be adapted with elasticated (finnished with toggles), part elasticated or other taut flexible linear elements performing the blocking function normally taken by the rods. Such tautness can be achieved by for instance twisting bands of resilient or flexible material, as featured in the priority application GB 0208488.7. Other means are also possible.

Flexibility of rod elements is desirable but not essntial. The prototypes use boxwood of square section. (Other sections are possible.)

Tongue extensions of the frame element are also possible adaptive means of securing the hoops by being placed in said hoops. Custom hoops can be provided (as mentioned above) but the norm is to use a standard metal washer form.

The frame element may be of multi-hole construction or lattice structure as a means of providing holes for rods. It can be made of rigid, stiff, or flexible materials, including plastics and foams. The outside edge can be of any configuration. It can also deform in the third dimension providing necessary bearing points have been met.

The decorative sheath can be any sheet mateial but if corrugated will fold over edges in a restricted way that will also restrict deformations of the frame element in a generally desirable way.

The shape of the cut-out frame aperture is designed to meet the outside edges of the display unit and/or the attached washers.

The proportions and scale of the invention are open variables.

The claims, to be submitted, are designed to maximise the scope of the

vention as anticipated in the above descriptions, which, with reference to the drawings, describe specific embodiment(s) of the invention.

DESCRIPTION OF DRAWINGS

- 1 FIG 1a,1b. Notional Version.
- 2 FIG 2a,2b.Version1: Front views with and without decorative sheath.
- 3 FIG 2c,2d Version1: Top view and rear view.
- 4 FIG 2e Version1: Side view and table-top version.
FIG 2f Version1c: Adapted for flexible /elasticated rod replacement.
- 5 FIG 3a,3b Version 2: Front and rear views..
- 6 FIG 3c,3d Version 2: Side central sections of wall and table-top versions.
- 7 FIG 3e ,3f Version 2b: Framing element with holes/slots for the hoops instead of main "frame" apperture.
- 8 FIG 4a, Version 3: Front view.
FIG 4b Version 3: Section of custom hoop.
- 9 FIG 5a,5b Version 4: Front and rear views.
- 10 FIG 5c,5d Version 4: Plan section and side section.
- 11 FIG 6 Version 5: Front view.
FIG 7 Version 6: Front view.

KEY TO DRAWINGS

- 1 Framing element.
- 2 Display screen.
- 3 Hoops.
- 4 Linear element as front rods.
- 4a Front rods: horizontal.
- 5 Linear element as rear diagonal rods.
- 5a Flexible/elasticated rod replacement.
- 5b Rear rods: vertical.
- 6 Linear element as rear horizontal rods.
- 7 Backing sheet.
- 8 Tongue for attaching tubular support strut.
- 9 Support strut.
- 10 Hanging hole (can also accommodate support strut.)
- 11 Decorative sheath
- 11a Outer fold.
- 11b Inner fold.
- 11c Folded edges.
- 12 Toggle.
- 13 Backing sheet.
- 14 Displayed material
- 15 Holes
- 15b Holes/slots for hoops. (Version 2b)
- 16 Void.
- 17 Table-top
- 18 Elasticated loop ie "elastic band"
- 19 Wall
- 20 Hanging pin

ABSTRACT

DEMOUNTABLE FRAMING SYSTEM

A demountable framing system comprising a frame element (1), a display screen (2), display material (14) and optional backing sheet (7), and elements connecting these wherein:

(as shown in Figures 2a,2b,2c,2d,2e,2f.)

(version 1) the position of the display screen (2), is maintained by hoops (3), on the corners of the display screen (2), into which are located two co-operating pairs of rods (4,5). The hoops are restrained by the frame element (1) which is itself sandwiched between rod ends, and (version 1c): flexible/elasticated linear elements.

The rear rods hold a decorative sheath (11), optionally secured with elastic(18) to provide a jig for self-assembly and being diagonal, support a backing panel (7), also able to apply force.

Or(version 4), with only two rods (5) on one (rear) side only, in holes (15) in frame element (1), which then supports the hoop's other (front) half;

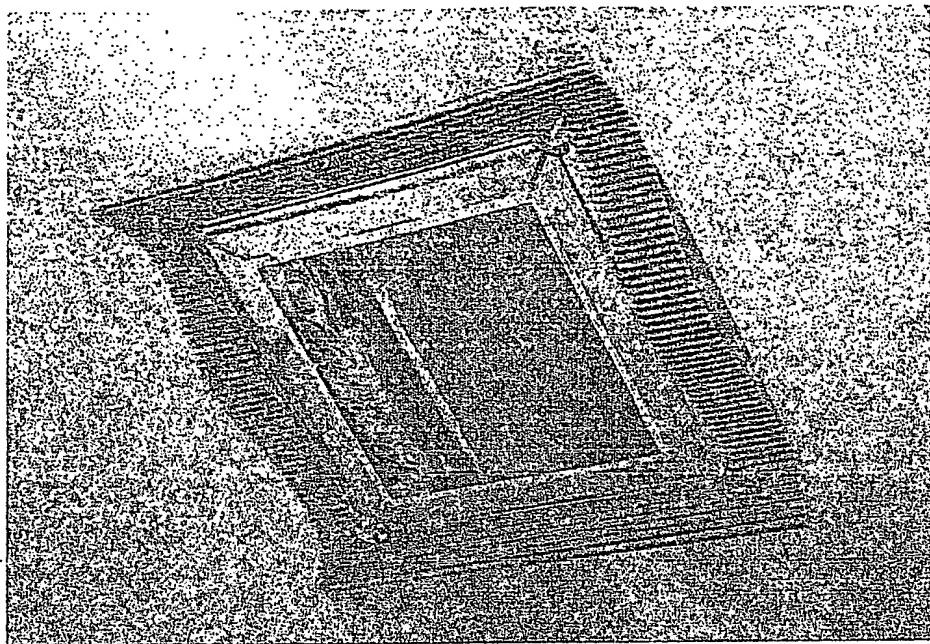
Or (version 3),adequately supports a (coned) custom hoop 3b;

Or(version 2), uses front rods(4), but with rear rods(5) located in rear supporting frame element, and (version 2b): no "window" in frame element.

photos

(1)

Version 2 : front view.



Version 2 : front view.
rear

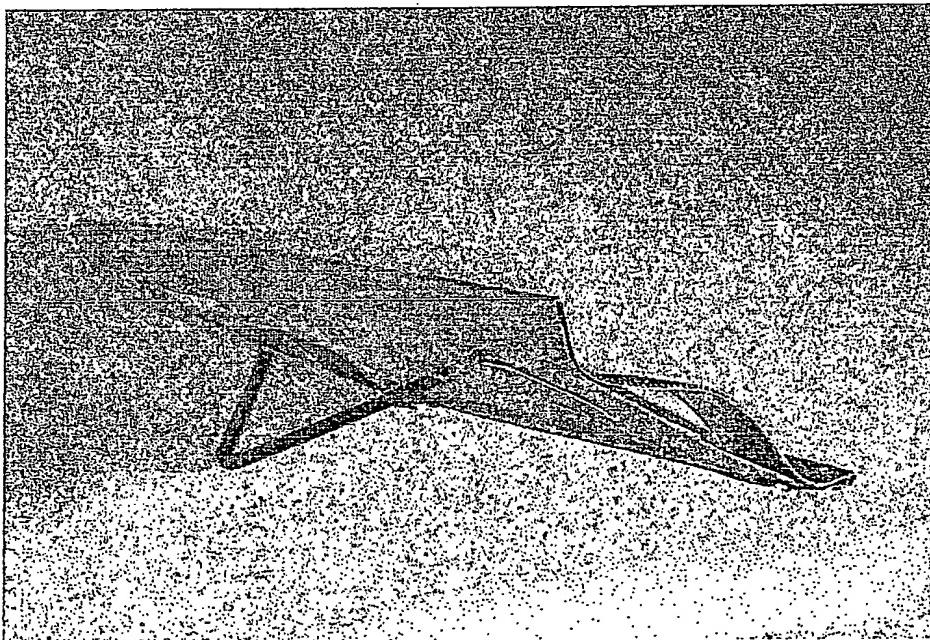


Fig 1a
Notional
Version a

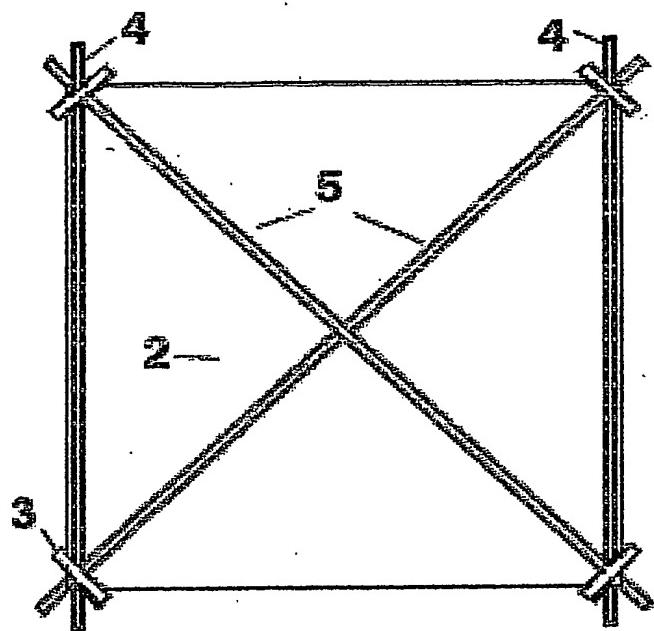


Fig 1b
Notional
Version b

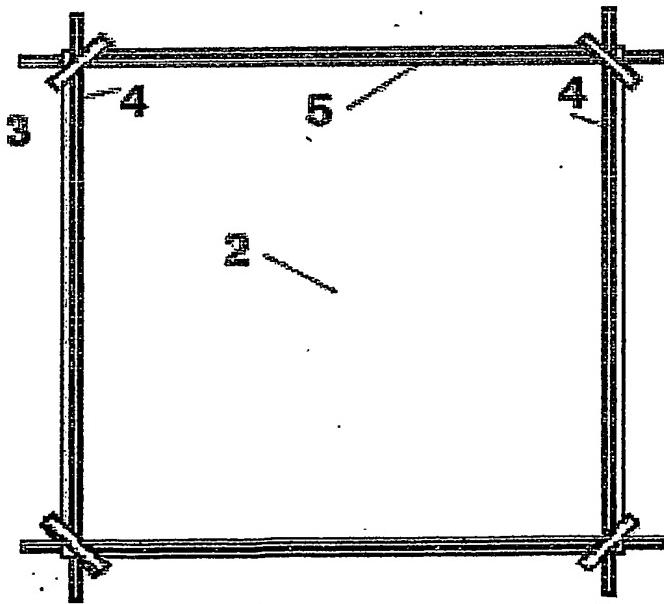
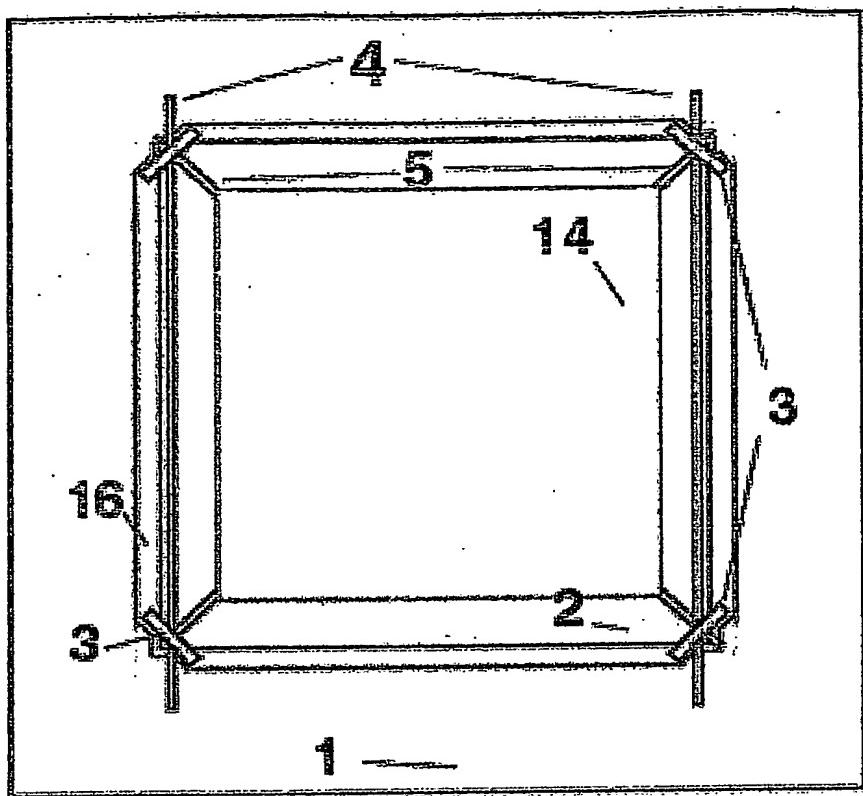
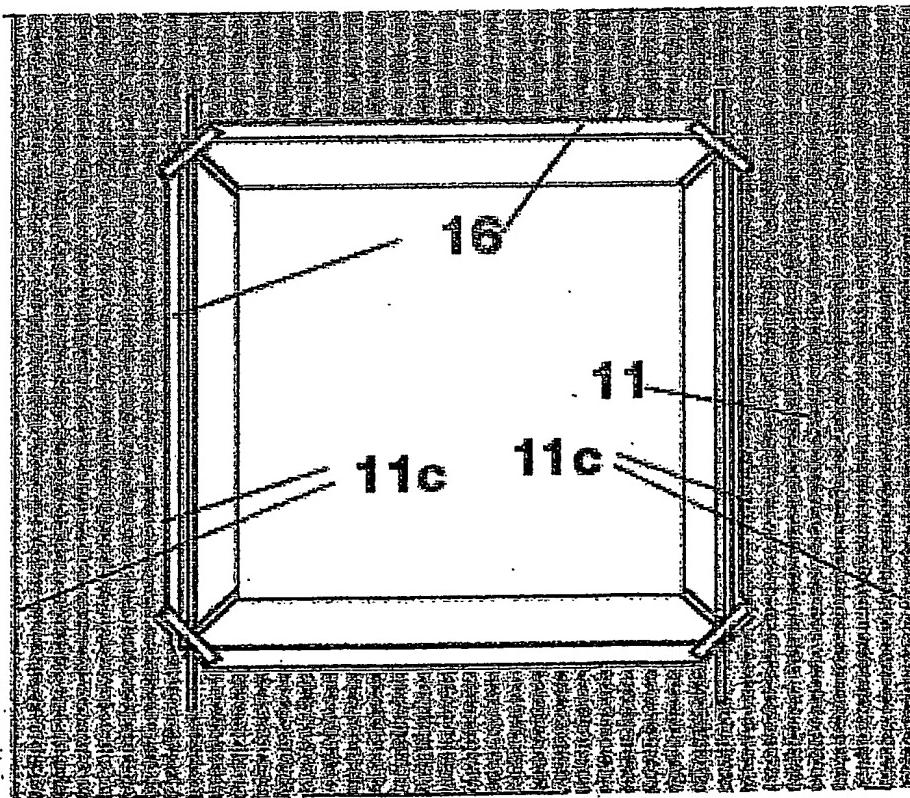


FIG 2a Version 1**FIG 2b Version 1**

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FIG 2c Version 1

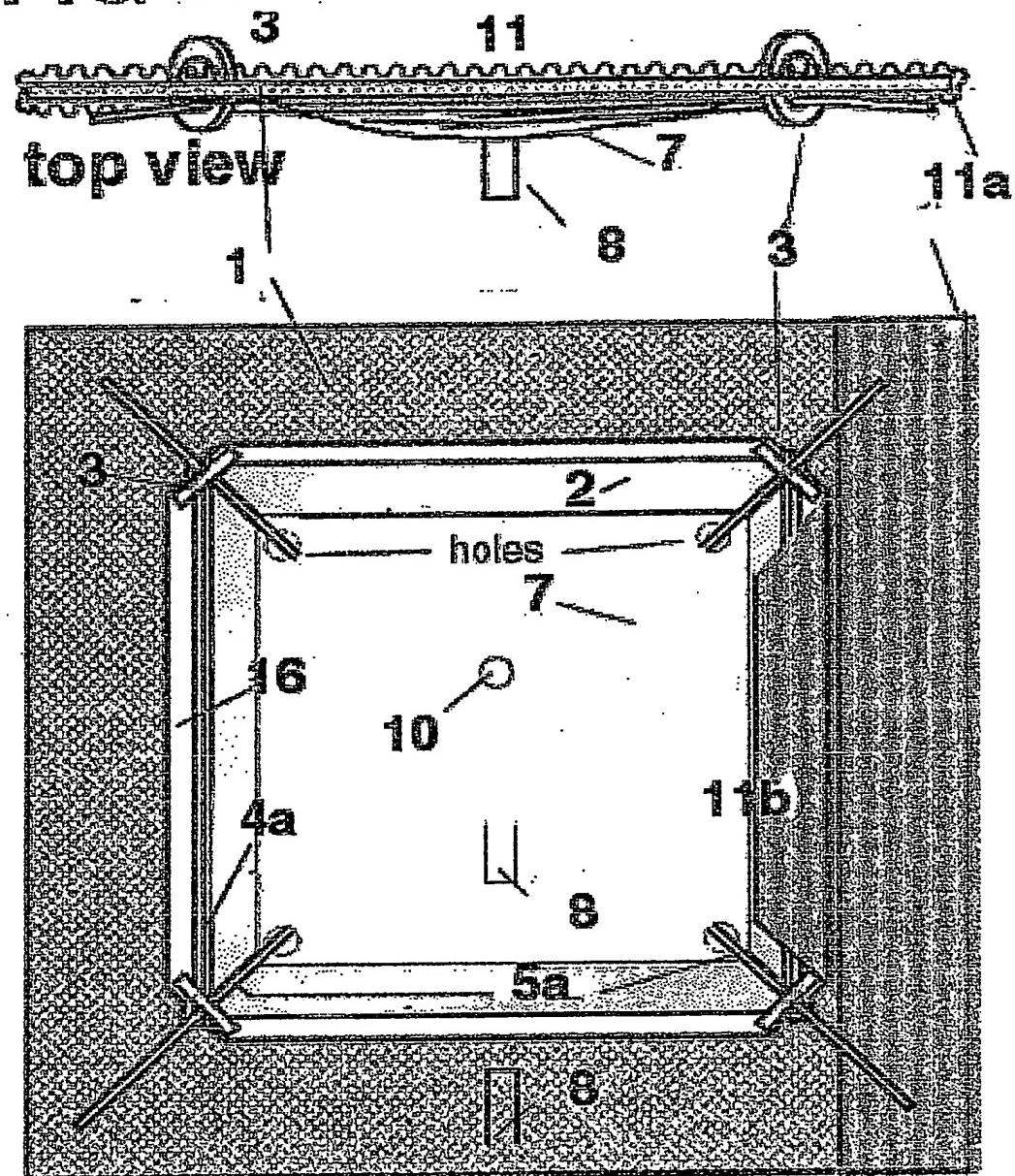


FIG 2d Version 1
rear view

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FIG 2e
side view
version 1
table top

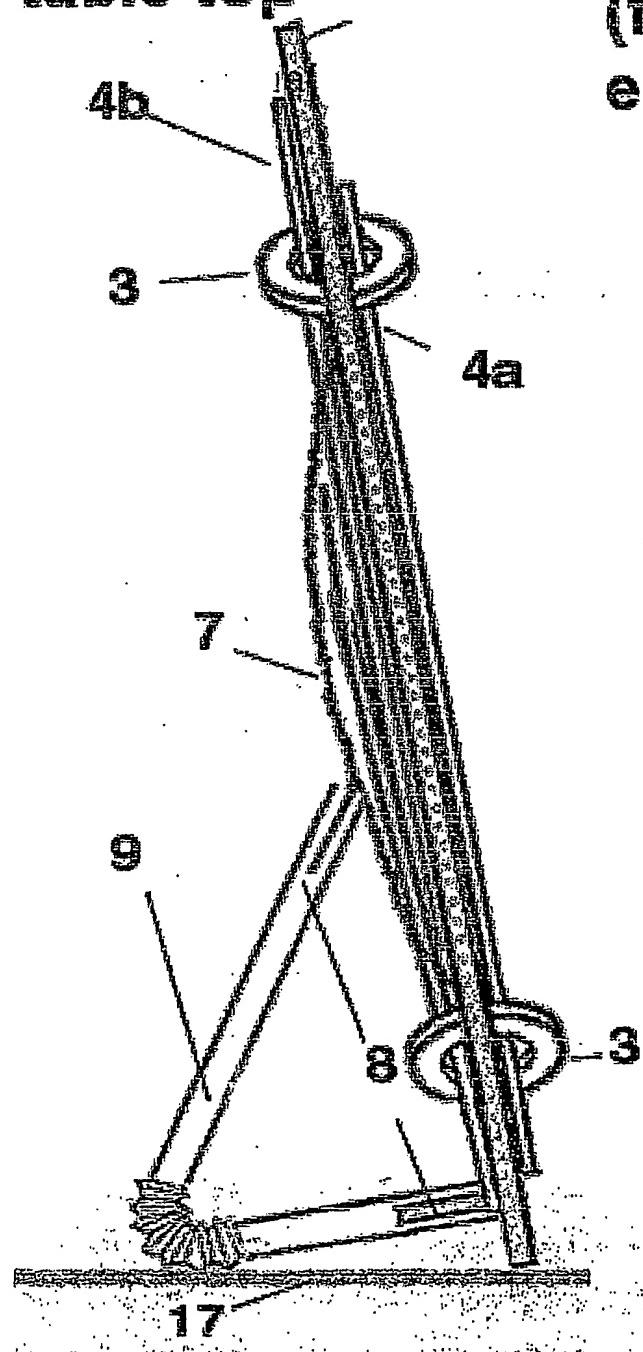


FIG 2f
corner
version 1c
(flexible linear
element)

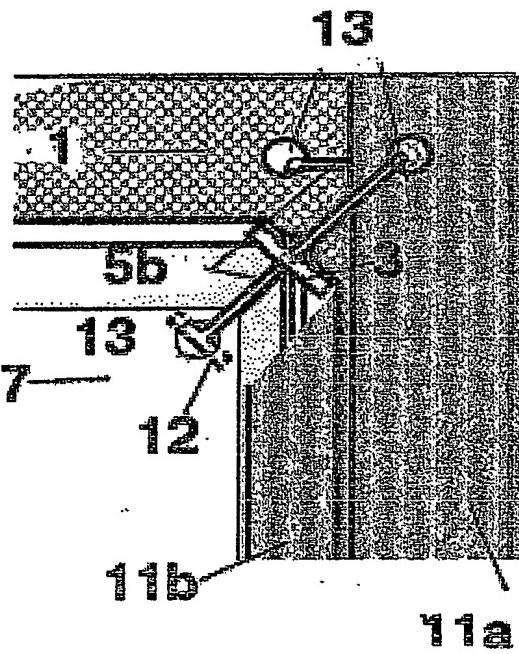


FIG 3a
version 2
front view

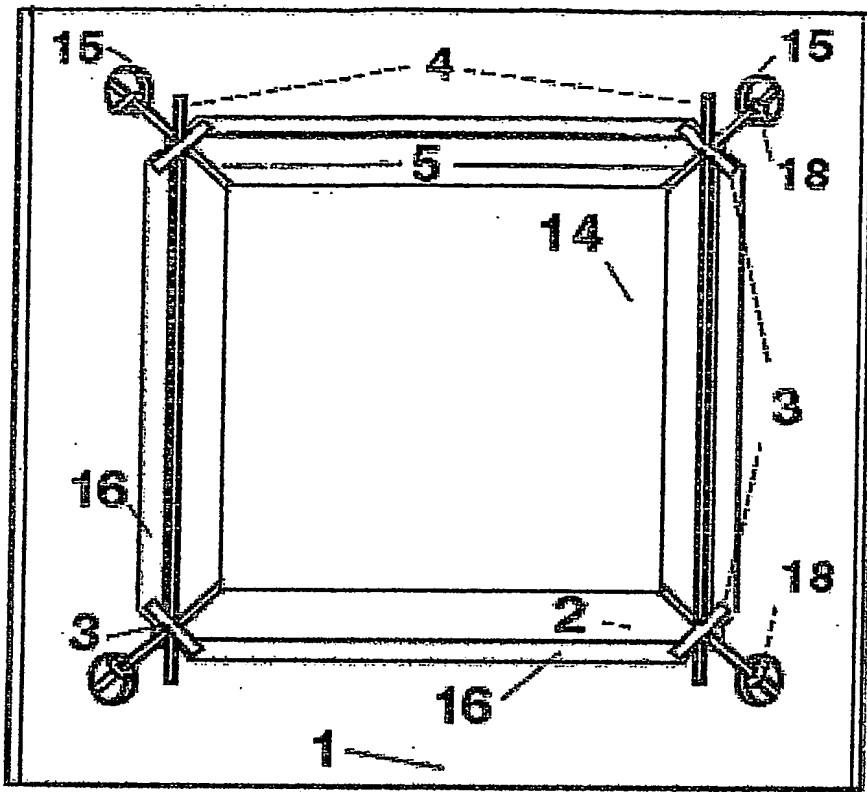


FIG 3b
version 2
rear view

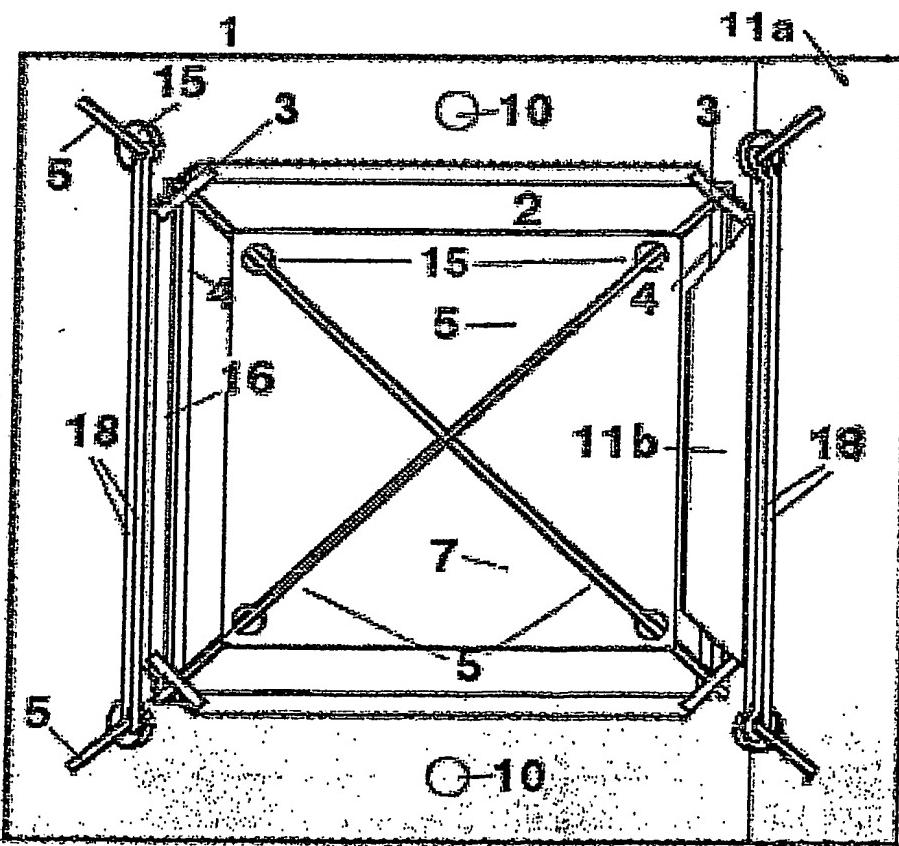
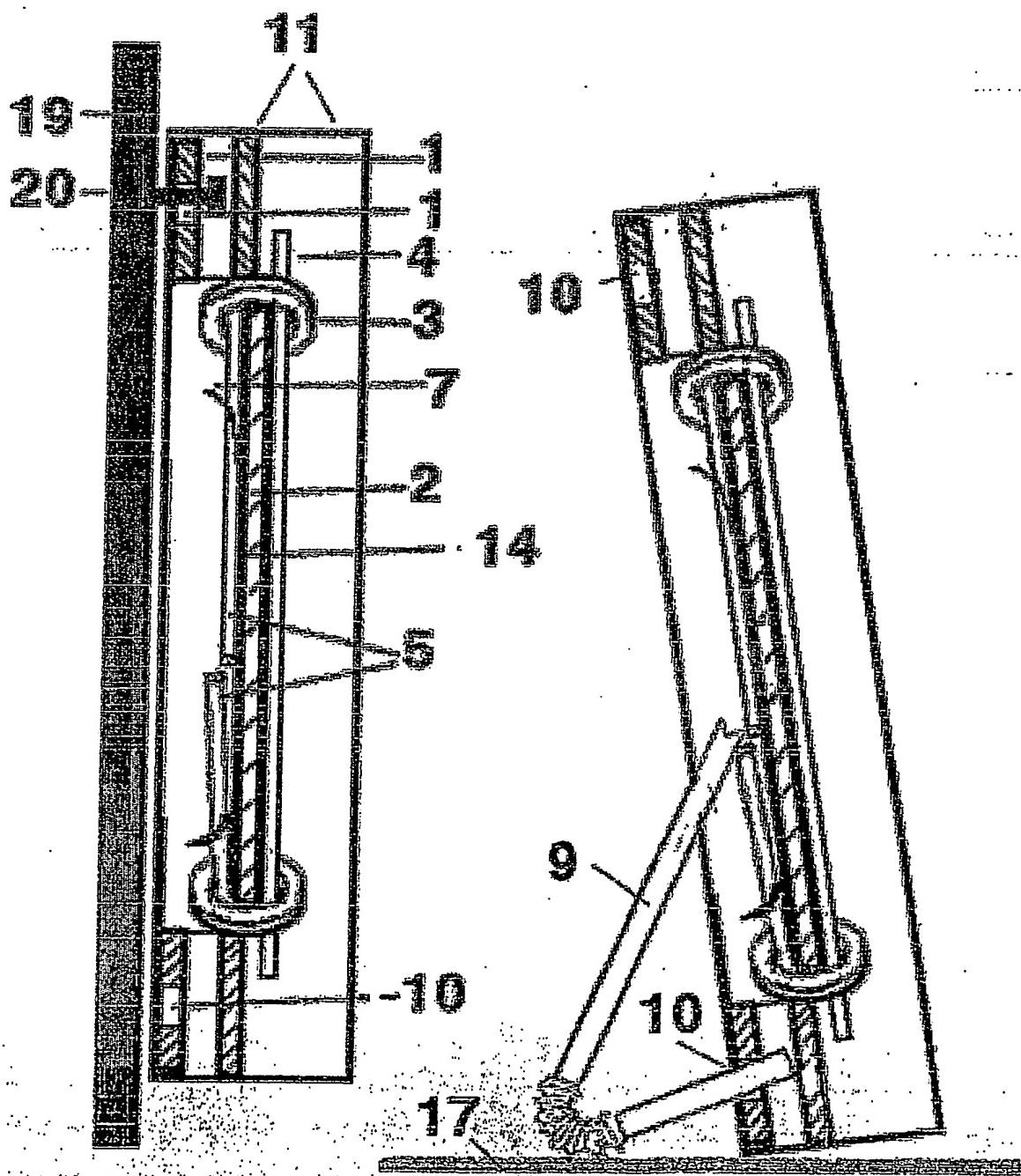


FIG 3c
version 2
wall-hanging
central section

Fig 3 d
version 2
table-top
central section



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FIG 3e
version 2b
front view

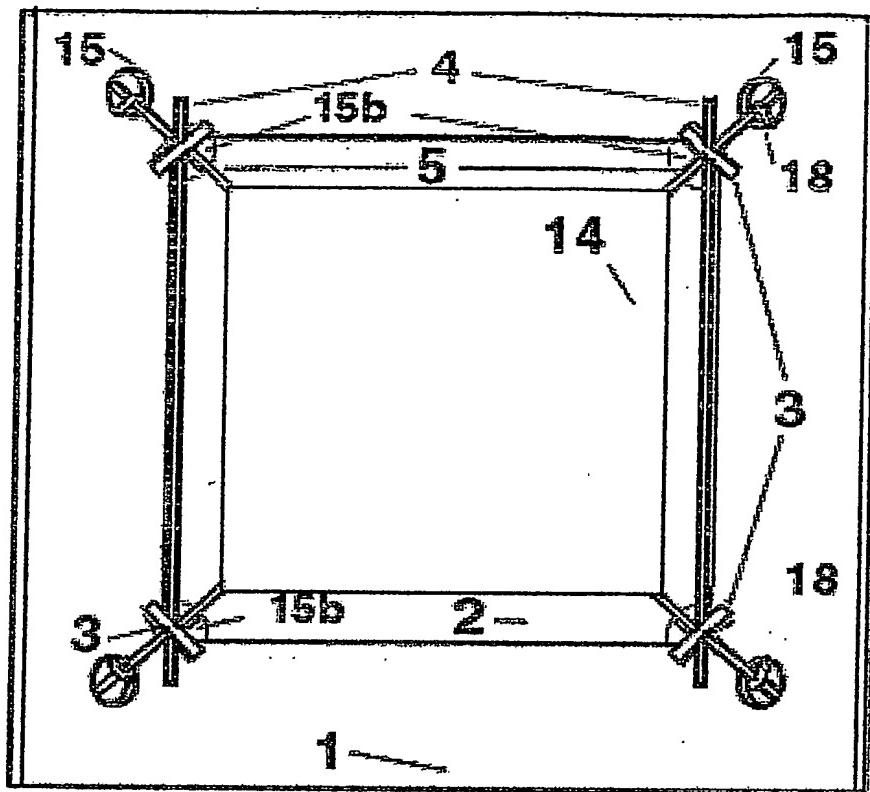
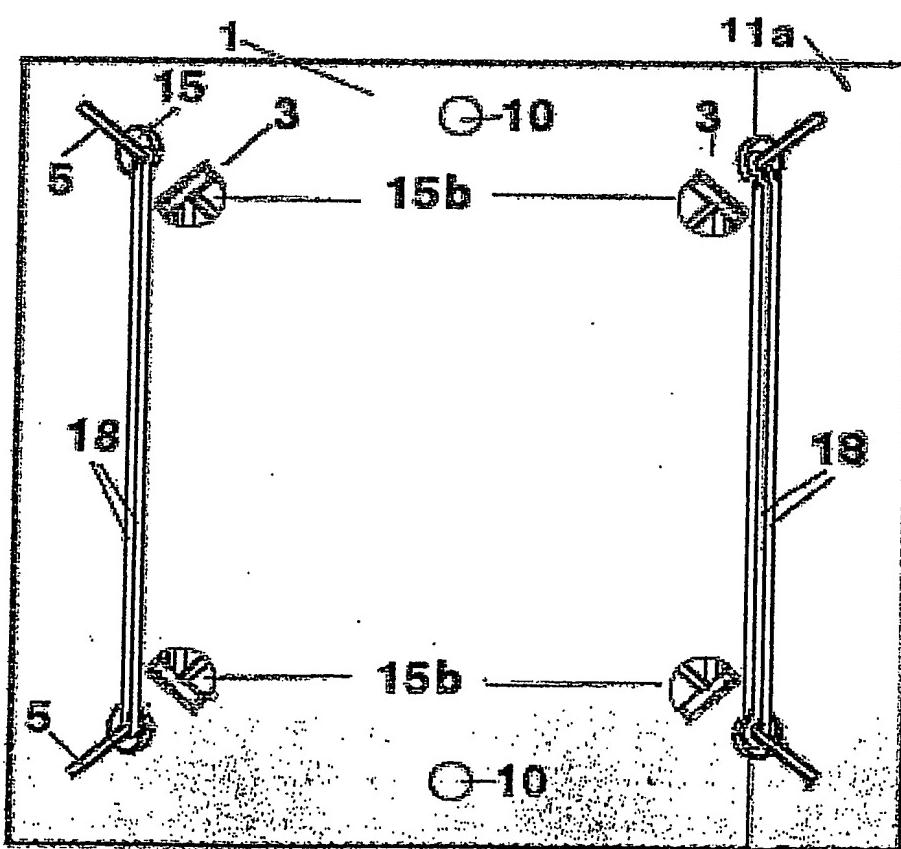


FIG 3f
version 2b
rear view



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FIG4a
version 3
front view

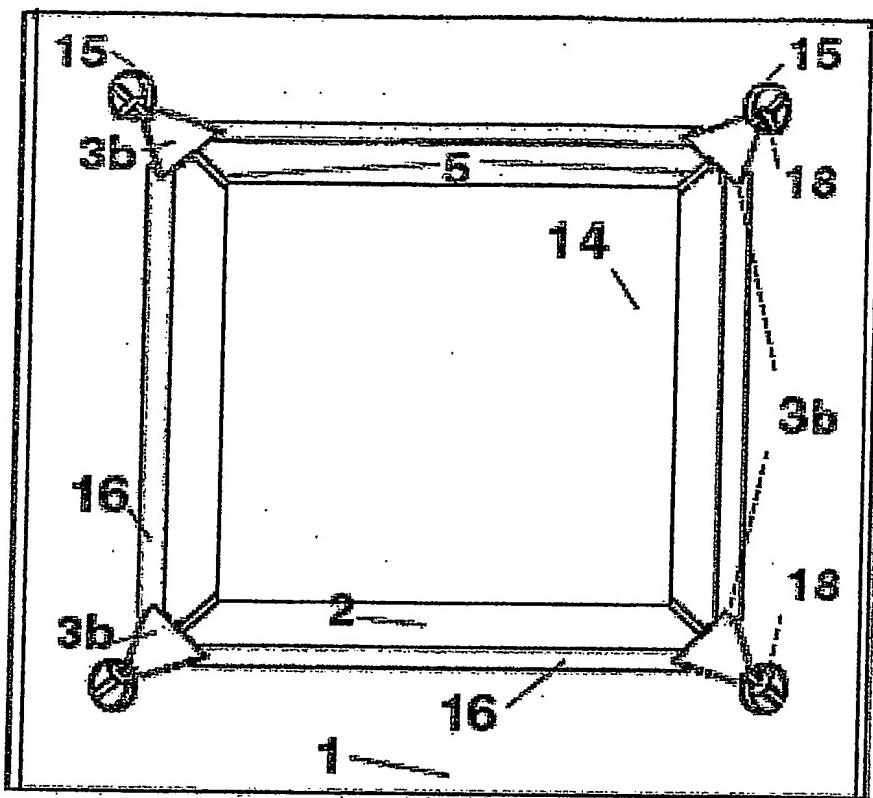
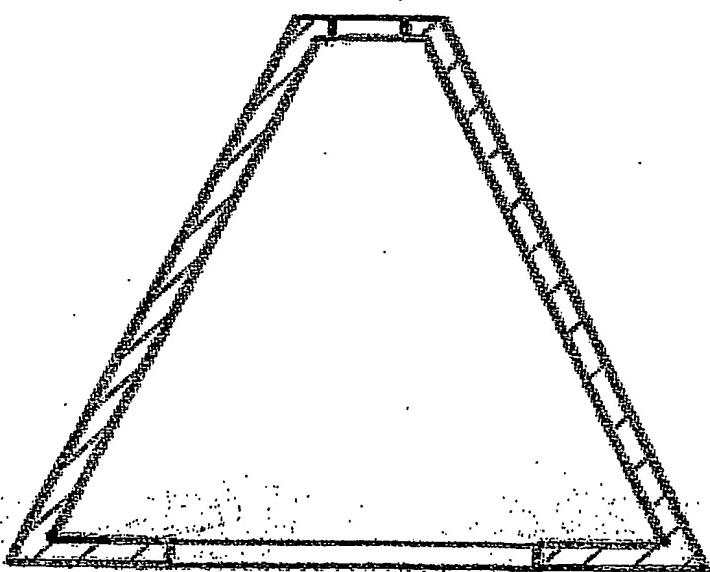


FIG4b
version 3
custom hoop



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FIG 5a version 4 front view

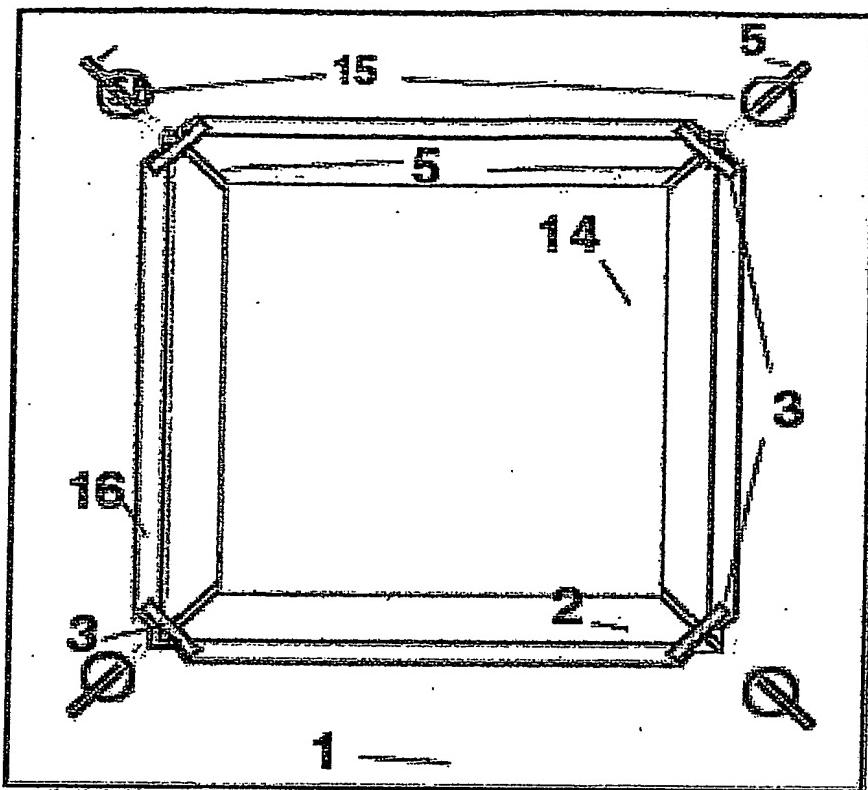


Fig 5b version 4 rear view

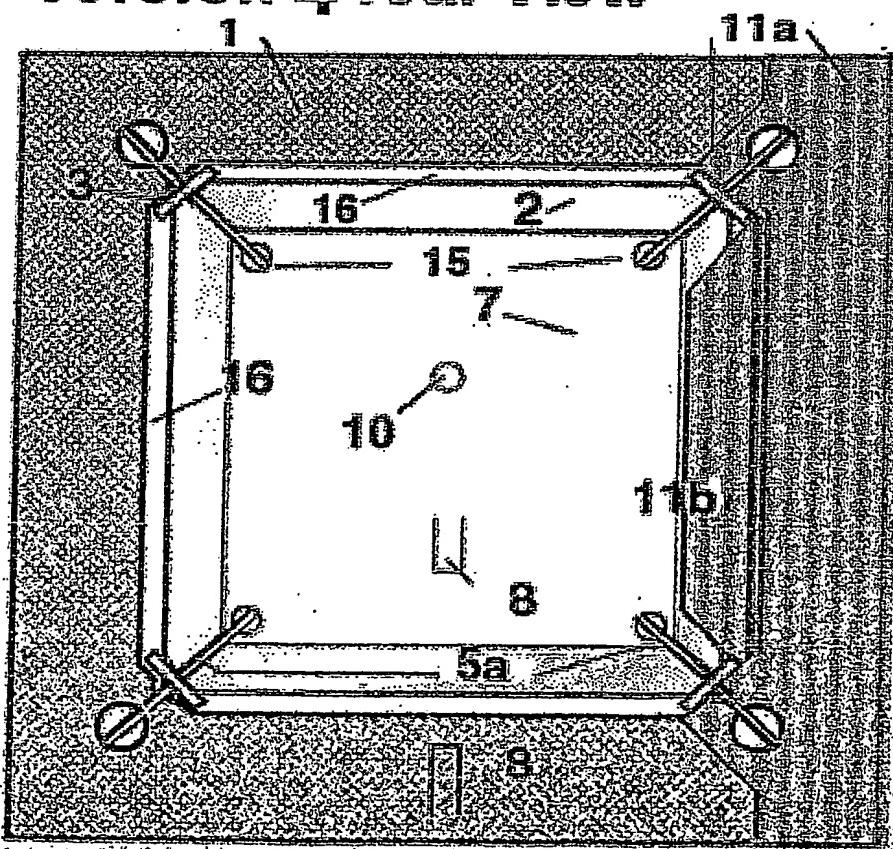


Fig 5c
version 4
plan section

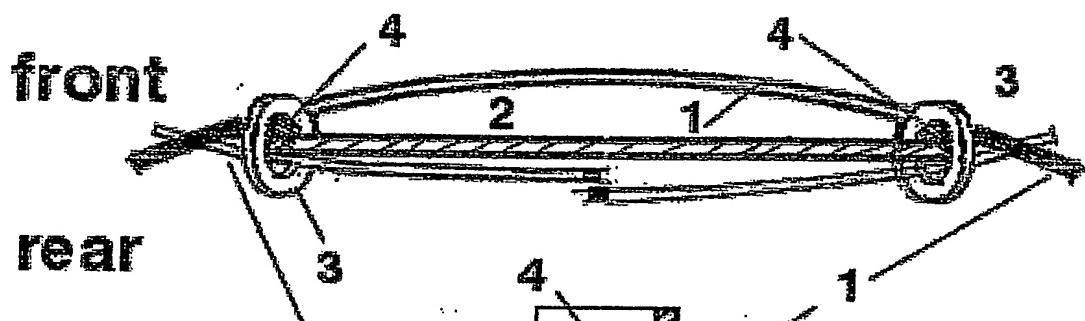


Fig 5d
side section
version 4
table-top



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FIG 6 Version 5

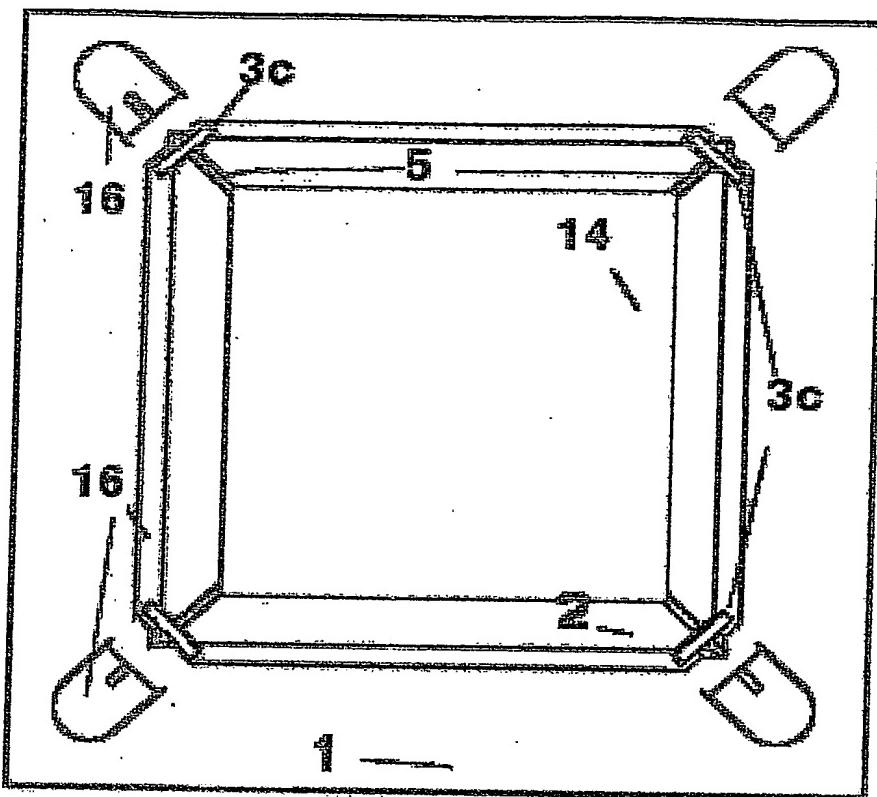
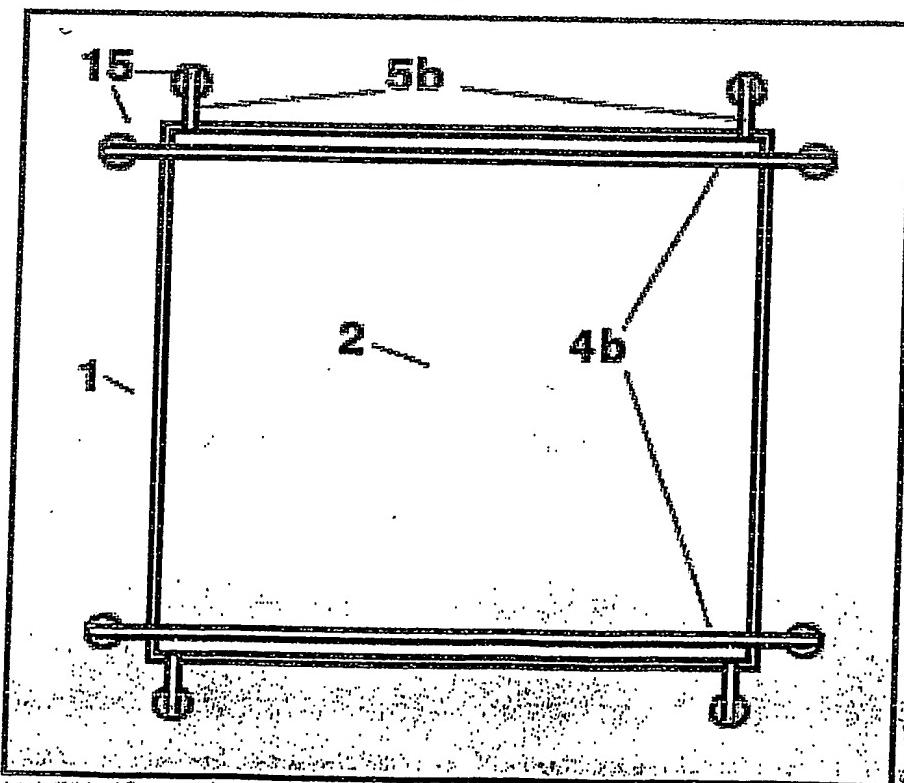


FIG 7 Version 6



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